FIG. 10 — K_L DISTRIBUTION FOR VARIOUS TAPER RATIOS (λ) $\alpha = 15°$

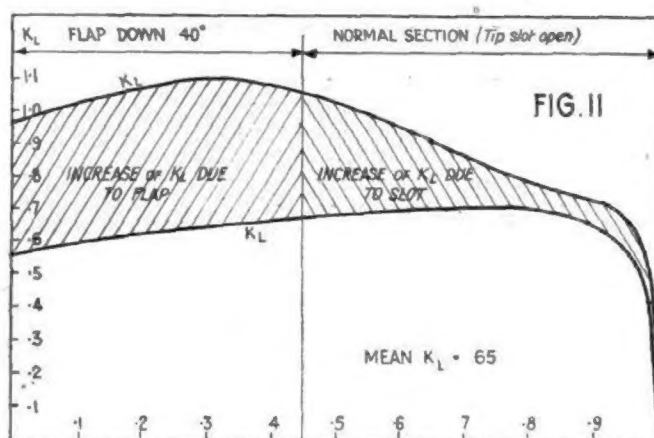| λ	MEAN K_L
4·2/1	·99
3/1	·98
2/1	·96

FIG. 11 — MEAN $K_L \cdot 65$

large percentage of the available maximum lift of a tip slot at a relatively small geometric angle of the whole aerofoil. In the example given it will be noticed that the geometric angle is only 15.5 deg., which is not more than the stalling angle of the unslotted section. In spite of this a very substantial lift increase is obtained from the wing tip slots.

Fig. 11 shows a comparison between the lift distribution for an unslotted and unflapped tapered wing at its maximum overall lift and the lift obtained for the same wing when fitted with a partially slotted flap and tip slot. The shaded areas indicate the lift-increase due to flap and tip slot. It follows from this that on a tapered wing the tip slots actually contribute very materially to the maximum lift obtainable, even at the stalling angle of the ordinary section, whereas on a rectangular wing their contribution to the total lift at normal stalling angles is negligible. The superstall angle, i.e., the angle at which the tip slots stall, is therefore also much larger for a rectangular wing than for a tapered wing.

The theoretically predicted mean K_L has been well confirmed by full-scale flight trials, and the maximum lift which was obtained on an aircraft fitted with the same wing as used for the calculation gave a measured maximum K_L of 1.06, and the damping-in roll at this K_L was still perfectly satisfactory. This K_L was actually obtained on an aircraft of nearly 10 tons all-up weight.

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THE LATE ROBERT LORAINE

IT seems a very long time ago since Robert Loraine, who died in a nursing home after an operation just before Christmas, was astounding the embryonic flying world with his daring feats in a Henry Farman biplane with Gnome engine. Since the war one has thought of him almost exclusively as an eminent actor and theatrical manager, but in the pages of Flight of the year 1910 he appears constantly as one of the most notable of the flying pioneers.

He learned to fly in France in June, 1910, and his French certificate No. 126 was accepted by the Aero Club of the United Kingdom. He took his Henry Farman to the flying meetings at Bournemouth and Blackpool in that same year. After the latter meeting was over he flew down to Southport, and then daringly set out across the sea to Cemlyn, near Llandudno. There he had a minor crash, but repaired his machine and reached Holyhead. After spending a night there he set out to fly the Irish Sea to Dublin. It was a tremendously reckless feat, considering how unreliable were the engines of those days, and to make matters worse he had no flotation gear of any sort. He had plenty of excitement during the crossing, though, to be fair to the Gnome, it was the petrol feed which nearly proved his undoing. Six times while he was over the open sea did the engine fail and bring him down almost to the level of the water, and each time it picked up just in time and allowed him to regain his height. When he was within a couple of hundred yards of Howth the final failure occurred, and the Farman and Loraine went into the sea. He swam to the lighthouse.

In the Army manoeuvres that autumn Loraine flew a Bristol fitted with a W/T transmitting set, and sent messages quite successfully from a distance of a quarter of a mile.

On the outbreak of war Loraine joined the R.F.C., and on October 26, 1915, he won the Military Cross for a daring attack on an Albatros. He drove it down from 9,000 feet to 600 feet, wounded the pilot and hit his camera and wireless transmitter. The Albatros fell in our lines. The citation in the London Gazette described this as a feat of "conspicuous gallantry and skill." In the Birthday Honours of 1917 he was made a Com-

panion of the Distinguished Service Order. At the battles of the Somme he commanded No. 40 Squadron, which he had himself raised. In due course he was promoted to Lieut.-Colonel and commanded a training station at home.

Mr. Robert Loraine at a Bournemouth meeting in 1910.